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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant : Raul Raudales
Serial No. : 09/293,198
Filed : April 16, 1999
Title : VEGETABLE PRODUCT DRYING

Art Unit : 3749
Examiner : Andrea M. Joyce

Mail Stop Appeal Brief - Patents
Hon. Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

(i) Real party in interest.

The real party in interest is Mesoamerican Development Institute Corp.

(ii) Related appeals and interferences.

None.

(iii) Status of claims.

Claim 1, 14-16, 28 and 35 have been canceled. Claims 2-4 being appealed stand rejected under 35 U.S.C. §102(e) as anticipated by Stoll, claims 5, 6, 11 and 12 being appealed stand rejected under 35 U.S.C. §102(e) as anticipated by Soucy, claims 32-34 and 36-42 being appealed stand rejected under 35 U.S.C. § 102(b) as anticipated by Soucy, claims 7, 8, and 13 being appealed stand rejected under 35 U.S.C. §103(a) as unpatenable over Soucy as a primary reference in view of Koizumi as a secondary reference, claims 8-10 being appealed stand rejected under 35 U.S.C. §103(a) as being unpatenable over Soucy as a primary reference in view of Qader as a secondary reference, and claims 17-21 being appealed stand rejected under 35

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U.S.C. §103(a) as unpatenable over Mullin as a primary reference in view of Drake as a secondary reference. Claims 22-27 and 29-31 have been withdrawn from consideration.

(iv) Status of amendments.

No amendment has been filed subsequent to final rejection.

(v) Summary of claimed subject matter.

The claimed subject matter comprises a dryer for drying vegetable product, such as 10 shown in FIG. 1, having a thermal collector constructed and arranged to convert solar energy to heat energy, such as 14, a heat transfer system, such as 16, and a housing, such as 12, having a drying chamber, such as 14. The heat transfer system is in thermal communication with both the thermal collector and the drying chamber such that heat is able to move from the thermal collector to the drying chamber. A photovoltaic module, such as 18, is constructed and arranged to provide electrical power to the heat transfer system, being electrically connected to the heat transfer system. The photovoltaic module may comprise a battery, such as batteries 90, 92 and battery bank 86. The photovoltaic module may provide all of the electrical energy consumed by the dryer. Pp.7,12.

The heat transfer system may comprise a first heat transfer circuit, such as 70, including a first pump, such as 78, and a first fluid heat transfer medium, for example, water, a second heat transfer circuit, such as 72, including a second pump, such as 80, and a second heat transfer medium, such as water, and a first heat exchanger in thermal communication with the thermal collector via the first heat transfer circuit and with the drying chamber via the second heat transfer circuit such that heat is able to move from the first heat transfer circuit to the second heat transfer circuit. The heat transfer system may comprise a second heat exchanger, such as 76. There may be a heat storage medium, such as the water in the thermal storage tank 102, in thermal communication with the drying chamber such that heat is able to move from heat storage medium to the second heat transfer circuit. The dryer may comprise an auxiliary heat source, such as furnace 100, in thermal communication with the drying chamber such that heat is able to move from the auxiliary heat source to the second heat transfer circuit. The furnace may be constructed and arranged to burn bile mass, such as coffee parchment. The first heat transfer medium may be water, and the second heat transfer medium may be air. The heat storage medium may be in thermal communication with the auxiliary heat source, the thermal collector and the drying chamber, wherein heat is able to move from the auxiliary heat source to the heat

storage medium, from the thermal collector to the heat storage medium, and from the heat storage medium to the drying chamber. Pp.11,13,14.

There may be an auxiliary generator in electrical communication with an electrical system of the dryer capable of providing all electrical energy required to operate the dryer, such as attached to sterling engine 202, such that the dryer is a component of an off-grid coffee processing system. The generator may be an external combustion engine, such as 202. P.17.

The dryer housing may define a cylindrical drying chamber and have an outer wall, such as rotating drum 306 shown in FIGS. 8 and 9 having perforations 314 and an infuser, such as 316, adjacent to the perforations for infusing fluid through the perforations, the housing being constructed and arranged to rotate relative to the infuser. The infuser may be periodically adjacent to first and second relative sides of the outer wall, the first and second sides capable of changing positions as the housing rotates relative to the infuser, the first relative side being in position for intaking fluid into the drying chamber when the second relative side is in a position for exhausting fluid from the drying chamber The infuser may be in thermal communication with a heat source for heating fluid to be infused into the drying chamber. Pp. 19-20.

There may be a set of doors, such as 318, in the cylindrical wall to load and unload vegetable product. There may be a set of baffles for mixing produce within the drying chamber, the baffles extending from the inner surface of the cylindrical wall, such as 548. Pp.20,22.

The housing may have a fluid intake port, such as space 510, and a fluid exhaust port located along a fluid flow path of the drying chamber with intake and exhaust ports oriented such that the fluid flow path includes a substantial component in the vertical direction and a set of support members, such as 518, providing channels substantially oriented in the direction of the fluid flow path. The channels may be adjustable relative to the vertical direction, and the intake port may be located vertically upward relative to the exhaust port. The channels may be constructed and arranged to conduct product from a higher level relative to ground level, to a lower level relative to the ground level. FIG.11, P.25.

(vi) Grounds of rejection to be reviewed on appeal.

1. The rejection of claims 32-34 and 36-42 under 35 U.S.C. §102(b) as clearly anticipated by Crossley.

2. The rejection of claims 2-4 under 35 U.S.C. §102(e) as anticipated by Stow.

3. The rejection of claims 5, 6, 11 and 12 under 35 U.S.C. §102(e) as anticipated by Soucy.

4. The rejection of claims 7, 8, and 13 under 35 U.S.C. §103(a) as being unpatenable over Soucy as a primary reference in view of Koizumi as a secondary reference.

5. The rejection of claims 8-10 under 35 U.S.C. §103(a) as unpatenable over Soucy as a primary reference in view of Qader as a secondary reference.

6. The rejection of claims 17-21 under 35 U.S.C.§103(a) as unpatenable over Mullin as a primary reference in view of Drake as a secondary reference.

(vii) Argument.

I. CROSSLEY DOES NOT ANTICIPATE CLAIMS 32-34 AND 36-42 AT LEAST BECAUSE THE REFERENCE DOES NOT DISCLOSE EACH AND EVERY ELEMENT IN A REJECTED CLAIM ARRANGED AS IN THE CLAIM.

The final action states:

> Applicant's arguments, filed July 17, 2003, with respect to claims **32-34** and **36-42**, have been fully considered but they are not persuasive. In response to the applicant's arguments, the recitation "a dryer for drying vegetable product" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F. 2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Therefore, the 102(b) rejection of claims **32-34** and **36-42** of the previous Office action still stands and has been made **FINAL**. Pp.2-3
>
> . . .
>
> Claims 32-42 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Crossley (US 3,566,770). Crossley discloses a dryer for drying vegetable product comprising:
>
> - A housing 26 defining a cylindrical drying chamber 22, the housing 26 having an outer wall extending around the drying chamber 22, the outer wall defining a plurality of perforations for intaking and exhausting fluid (column 2, lines 13-19);
> - An infuser 62 adjacent to the perforations for infusing fluid through the perforations (column 2, lines 58-79); and

- Wherein the housing 26 is constructed and arranged to rotate relative to the infuser 62 (column 2, lines 27-37). Office Action March 24, 2003, Pp. 9-10.

The reliance on *In re Hirao*, 190 U.S.P.Q. 15 (C.C.P.A. 1976) and *Kropa v. Robie*, 88 U.S.P.Q. 478 (C.C.P.A. 1951) is inapposite. In both of those cases the predecessor court relied on the preamble limitations in interpreting the claims. In *Hirao* the court said, "The Solicitor's interpretation of the preamble would improperly *broaden* the scope of the claim." 190 U.S.P.Q. at 18.

In *Kropa* the court said:

> In the case before us, the words "An abrasive article" are essential to point out the invention defined by the counts. 88 U.S.P.Q. at 481.

In *In re Fritch*, 23 U.S.P.Q. 2d 1780, 1781 (Fed. Cir. 1992) the court said:

> The critical language in Fritch's indelpendent claims is that the device is to be, in its entirety, both flexible and "conformable to a ground surface of varying slope". These limitations, although located in the claims' preambles, "are necessary to give meaning to the claim[s] and properly define the invention".(2)

2. *Perkin Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 896, 221 USPQ 699, 675 (Fed. Cir. 1984).

"It is well settled that anticipation under 35 U.S.C. 102 requires the presence in a single reference of all of the elements of a claimed invention." *Ex parte Chopra*, 229 U.S.P.Q. 230, 231 (BPA&I 1985) and cases cited.

"Anticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim." *Connell v. Sears, Roebuck & Co.*, 220 U.S.P.Q. 193, 198 (Fed. Cir. 1983).

"This court has repeatedly stated that the defense of lack of novelty (i.e., 'anticipation') can only be established by a single prior art reference which discloses each and every element of the claimed invention." *Structural Rubber Prod. Co. v. Park Rubber Co.*, 223 U.S.P.Q. 1264, 1270 (Fed. Cir. 1984), citing five prior Federal Circuit decisions since 1983 including Connell.

In a later analogous case the Court of Appeals for the Federal Circuit again applied this rule in reversing a denial of a motion for judgment n.o.v. after a jury finding that claims were anticipated. *Jamesbury Corp. v. Litton Industrial Prod., Inc.*, 225 U.S.P.Q. 253 (Fed. Cir. 1985).

After quoting from *Connell*, "Anticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim," 225 U.S.P.Q. at 256, the court observed that the patentee accomplished a constant tight contact in a ball valve by a lip on the seal or ring which interferes with the placement of the ball. The lip protruded into the area where the ball will be placed and was thus deflected after the ball was assembled into the valve. Because of this constant pressure, the patented valve was described as providing a particularly good seal when regulating a low pressure stream. The court quoted with approval from a 1967 Court of Claims decision adopting the opinion of then Commissioner and later Judge Donald E. Lane:

> [T]he term "engaging the ball" recited in claims 7 and 8 means that the lip contacts the ball with sufficient force to provide a fluid tight seal. *** The Saunders flange or lip only sealingly engages the ball 1 on the upstream side when the fluid pressure forces the lip against the ball and never sealingly engages the ball on the downstream side because there is no fluid pressure there to force the lip against the ball. The Saunders sealing ring provides a compression type of seal which depends upon the ball pressing into the material of the ring. *** The seal of Saunders depends primarily on the contact between the ball and the body of the sealing ring, and the flange or lip sealingly contacts the ball on the upstream side when the fluid pressure increases. 225 U.S.P.Q. at 258.

Relying on *Jamesbury*, the ITC said, "Anticipation requires looking at a reference, and comparing the disclosure of the reference with the claims of the patent in suit. A claimed device is anticipated if a single prior art reference discloses all the elements of the claimed invention as arranged in the claim." *In re Certain Floppy Disk Drives and Components Thereof*, 227 U.S.P.Q. 982, 985 (U.S. ITC 1985).

The reference does not disclose a drier for drying vegetable product. The reference entitled, "Apparatus for Infusing Tea, Coffee and the Like" discloses, "An apparatus for infusing a single unit serving of a beverage such as coffee wherein dry ingredients and hot liquid are fed to a chamber at least part of a wall of which is pervious to liquid, the chamber is rotated about a horizontal axis to infuse the beverage and force it outwards through the previous wall of the chamber under the influence of centrifugal force, and the spent ingredients are discharged from one end of the chamber as by a piston disc movable relative to the chamber." Abstract. Manifestly, wetting dry ingredients with hot liquid is the exact opposite of a drier for drying vegetable product as disclosed and claimed in this application.

The reference does not disclose a housing 26 defining a cylindrical drying chamber 22. The reference discloses, "A liquid pervious cylindrical chamber 22 is constituted by a bronze carrier part 24 with a brazed-on perforated cylinder 26 projected outwardly therefrom...." Column 2, lines 13-15. The reference explains, "Hot water together with the dry ingredient is fed to the chamber 22, and the cylinder is simultaneously rotated at high speed by the motor 34, so that under the influence of centrifugal force the ingredient lies against the inner surface of the chamber and the hot water is forced through the ingredient and through the pervious wall of the cylinder into the space surrounding the cylinder within the casing 10." Column 2, line 72-column 3, line 3. A chamber fed hot water together with the dry ingredient can hardly be characterized as a drying chamber when it is actually a wetting chamber. Nor does the reference disclose the limitations added by claim 32, calling for the infuser being periodically adjacent to the first and second relative sides of the outer wall, the first and second sides capable of changing position as the housing rotates relative to the infuser, the first relative side being in a position for intaking fluid into the drying chamber when the second relative side is in a position for exhausting fluid from the drying chamber. Nor does the reference disclose the limitations added by claim 34 calling for the infuser being in thermal communication with a heat source for heating fluid to be infused into the drying chamber. Nor does the reference disclose that the infuser comprises a pump in fluid communication with the drying chamber through the perforations. Nor does the reference disclose the set of doors in the cylindrical wall to load and unload vegetable product added to claim 36 by claim 37. Nor does the reference disclose a set of support members providing channels substantially oriented in the direction of the fluid flow path called for by claim 39, disclose the channels adjustable relative to the vertical direction added to claim 39 by claim 40, nor the housing comprising an entry port and an exit port, with the entry port located vertically upward relative to the exit port added to claim 39 by claim 41, or the limitation added to claim 39 by claim 42 calling for the channels being constructed and arranged to conduct product from a higher level relative to a ground level to a lower level relative to the ground level.

If this ground of rejection were repeated, the Examiner was respectfully requested to quote verbatim the language in the reference regarded as corresponding to each element in these rejected claims. The Examiner did not and can not comply with this request. Instead of identifying where in the references are elements we said were absent from the reference, the sole

basis for the maintaining the anticipation rejection is refusing to consider the specific limiting language at the very beginning of these claims on the grounds that these specific limitations are only preambles which can be ignored. Manifestly, this language can not be ignored. The very title of the invention is VEGETABLE PRODUCT DRYING. These claims must be construed as limited to vegetable product drying.

II. STOLL DOES NOT ANTICIPATE CLAIMS 2-4 AT LEAST BECAUSE THE REFERENCE DOES NOT DISCLOSE EACH AND EVERY ELEMENT IN THESE CLAIMS ARRANGED AS IN EACH CLAIM.

The final action states:

> Claims 2-4 are rejected under 35 U.S.C. 102(e) as being anticipated by Stoll (US 5,960,560). Stoll discloses a dryer 16a for drying vegetable product, as shown in Figure 10, comprising:
> - a thermal collector **28** constructed and arranged to convert solar energy **30** to heat energy (column 4, lines 50-53);
> - a heat transfer system **26** (column 4, lines 48-49);
> - a housing **18** having a drying chamber **20** (column 4, lines 48-49);
> - a housing **18** having a drying chamber **20** (column 4, lines 43-44);
> - wherein said heat transfer system **26** is in thermal communication with both said thermal collector **28** and said drying chamber **20** such that heat is able to move from said thermal collector **28** to said drying chamber **20** (column 4, line 66-column 5, line 3);
> - a photovoltaic module **76** constructed and arranged to provide electrical power to said heat transfer system **26**, said photovoltaic module **76** being electrically connected to said heat transfer system **26** (column 5, lines 35-41);
> - wherein said photovoltaic module **76** further comprises a battery **78** constructed and arranged to store electrical energy (column 5, lines 41-43); and
> - wherein said photovoltaic module **76** provides all of the electrical energy consumed by dryer **16a.** Pp.3-4.

The reference describes FIG. 10 as follows:

> A modified thermal solar dehydrator 16a is shown in Figs. 10 through 14, wherein the air conduit system 48 further includes a plurality of photovoltaic cells 76 mounted onto the top wall 32 to convert the sunlight 30 into electricity. A plurality of batteries 78 are electrically connected to the photovoltaic cells 76, so that the electricity can be stored within the batteries 78. A plurality of heat

> lamps 80 are provided, with each mounted within one drying chamber 20. A plurality of thermostats 82 are also provided. Each is electrically connected between the batteries 78, one fan 54 and one heat lamp 80. The fans 54 and the heat lamps 80 can be turned on and off by the thermostats 54, to regulate the air temperature within the drying chambers 20.
>
> Each fan 54 includes a cover 84 to keep out rain and debris and a screen 86 to protect the fan 54 from insects. Each fan 54 contains a damper 88 which can be closed when the fan 54 is not operating. Column 5, lines 37-54.

The reference states, "A structure 26 is for forcing air into and out of the drying chambers 20." Column 24, lines 47-49.

> The air forcing structure 26 consist of an air conduit system 48 extending through the rear wall 38 of the enclosure18, to bring air into the drying chambers 20. An air vent 50 is the front wall 40 of the enclosure 18, so that the heated air can exit through the air vent 50.
>
> The air conduit system 48 comprises a plurality of air intake pipes 52. Each air intake pipe 52 extends through a bottom portion of the rear wall 38 of the enclosure 18 and into one drying chamber 20. A plurality of fans 54 are provided. Each fan 54 is mounted to a first end of one air intake pipe 52 remote from the enclosure 18. A plurality of vertical air pipes 56 are provided. Each vertical air pipe 56 has a plurality of holes 58 and is mounted to a second end of one air intake pipe 52 in one drying chamber 20, and extends upwardly against the rear wall 38 of the enclosure18.
>
> A plurality of horizontal air pipes 60 are also provided. Each horizontal air pipe 60 has a plurality of holes 62 and is mounted to the second end of one air intake pipe 52 in one drying chamber 20 and extends forwardly against the bottom wall 32 of the enclosure 18. The fans 54 will force air through the air intake pipes 52 and out of the holes 58 in the vertical air pipes 56 and the holes 62 in the horizontal air pipes 60.
>
> The air vent 50 includes a flap 64 hingedly mounted along a top edge of the air vent 50, which will open to allow the air to exit from the air vent 50. The air allowing assembly 28 consists of each side wall 36 having a frame 66, an outer transparent panel 68 attached to the exterior of the frame 66 and an inner black panel 70 attached to the interior of the frame 66, forming a sealed plenum 72 therebetween, so that the sunlight 30 can pass through the outer transparent panel 68 and heat up the inner black panel 70 and the air within the drying chambers 20. Column 4, line 66- column 5, line 32.

A basis fallacy in the Examiner's position is that total voltaic module 76 is not constructed and arranged to provide electrical power to heat transfer system 26, but provide electrical energy to heat lamps 80 that are "mounted within one drying chamber 20," not furnishing electrical energy to heat transfer system 26. Nor does the reference disclose that the photovoltaic module provides all of the electrical energy consumed by the dryer.

III. SOUCY DOES NOT ANTICIPATE CLAIMS 5, 6, 11 AND 12 AT LEAST BECAUSE THE REFERENCE DOES NOT DISCLOSE EACH AND EVERY ELEMENT IN THESE CLAIMS ARRANGED AS IN EACH CLAIM.

The final action states:

> Claims 5, 6, 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Soucy (US 6,202,321 B1). Soucy discloses a dryer 50 for drying vegetable product (column 5, lines 47-62), shown in Figures 5 and 6, comprising:
>
> - a thermal collector 510 constructed and arranged to convert solar energy to heat energy;
> - a heat transfer system 504;
> - a housing 500 having a drying chamber;
> - wherein said heat transfer system 504 is in thermal communication with both said thermal collector 509 and said drying chamber 500 such that heat is able to move from said thermal collector 509 to said drying chamber; and
> - wherein heat transfer system 504 further comprises:
>   - a first heat transfer circuit 112, 113 (or 122, 123) including a first pump and first heat transfer medium (column 3, lines 45-50 and column 7, lines 25-37), as shown in Figure 11A (or Figures 11B and 11C);
>   - a second heat transfer circuit including a second pump 508 and a second heat transfer medium;
>   - a first heat exchanger 111 (or 121) (column 3, lines 45-50 and column 7, lines 25-37), as shown in Figure 11A (or Figures 11B and 11C);
>   - wherein said first heat exchanger 111 (or 121) is in thermal communication with said thermal collector 510 via said first heat transfer circuit 112, 113, (or 122, 123) and said first heat exchanger 111 (or 121) in thermal communication with said drying

chamber 500 via said second heat transfer circuit such that heat is able to move from said first heat transfer circuit 112, 113 (or 122, 123) to said second heat transfer circuit;

- wherein first heat transfer medium is water (column 3, lines 45-47); and
- wherein said second heat transfer medium is air (column 5, lines 57-62). Pp.4-5.

The reference discloses:

> FIG. 11A is a top view of partition elements configured to grip tubing carrying hot water or other fluid, which functions as a heat exchanger.
>
> FIG.11B is a top view of a partition element configured with an internal fluid cavity and functioning as a heat exchanger. Column 3, lines 45-50.
>
> . . .
>
> Referring now to FIG. 11A, wall section 111 has ribs 112 sized and spaced to provide adjacent air channels, and is further configured with press fit tubing grips 113 to grip tubing, arranged to secure a length of tubing pass back and forth through its core. The tubing carries liquid coming from a heat source. The wall section acts as a heat exchanger, heating the materials in the container and generally enhancing the drying process. FIG 11B shows a wall section 121 with ribs 122 and a central reservoir 123, through which the heated liquid passes, rather than the tubing of FIG. 11A. FIG. 11C shows a face view of reservoir 123, with side mounted inlet 124 and outlet 125 for circulation the heating liquid. Column 7, lines 25-37.
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> . . .
>
> The back wall of the container effectively closes that end of the plenum. The resulting air flow is from solar panel 510 into container 500, through the bulk materials, and into the upper area of plenum 504 to be exhausted by fan 508, similar to the previously described embodiments. Column 5, lines 57-62.

A basic fallacy in this rejection is absence in the reference of anything resembling the first pump recited in the rejected claims. The absence in the reference of a single limitation is a sufficient basis for withdrawing the rejection of claims 5, 6, 11 and 12 as anticipated by the reference.

IV. CLAIMS 7, 8, AND 13 MEET THE CONDITIONS FOR PATENTABILITY UNDER SECTION 103 AT LEAST BECAUSE IT IS IMPOSSIBLE TO COMBINE THE PRIMARY AND SECONDARY REFERENCES TO MEET THE LIMITATIONS OF THESE CLAIMS.

The final action states:

> Claims 7, 8, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soucy (US 6,202,321 B1) in view of Koizumi et al. (US 4,137,898). Soucy teaches a drying apparatus comprising all limitations recited in claims 7, 8, and 13, with the exception of a specific heat storage medium and a specific auxiliary heat source, although Soucy does teach that auxiliary heat can also be added anywhere to the airflow (column 8, lines 40-49). Koizumi et al. teaches use of a heat storage medium 11 for preserving the heat of hot air in thermal communication with an auxiliary heat source 12 for heating air by other means than solar energy (column 2, lines 11-33). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the drying apparatus of Soucy to have a heat storage medium in thermal communication with an auxiliary heat source to provide heat to the drying chamber of Soucy because, as taught by Koizumi et al., it is well-known in the art to utilize a heat storage medium in conjunction with an auxiliary heat source in order to operate the system at night time or during the time in which sunshine is not obtained for drying Column 1, lines 6-13. Pp.6-7.

"The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re Gordon,* 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

"Although the Commissioner suggests that [the structure in the primary prior art reference] could readily be modified to form the [claimed] structure, '[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.'" *In re Laskowski*, 10 U.S.P.Q. 2d 1397, 1398 (Fed. Cir. 1989).

"The claimed invention must be considered as a whole, and the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination." *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick*, 221 U.S.P.Q. 481, 488 (Fed. Cir. 1984).

"Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under Section 103, teachings of references can be combined only if there is some suggestion or incentive to do so." *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984) (emphasis in original, footnotes omitted).

"The critical inquiry is whether 'there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. [citing Lindemann with emphasis added.]'" *Fromson v. Advance Offset Plate, Inc.*, 225 U.S.P.Q. 26, 31 (Fed. Cir. 1985).

As the Federal Circuit Court of Appeals said in *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999):

> Close adherence to this methodology is especially important of less technologically complex inventions, where the very ease with which the invention can be understood may prompt one 'to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.'

And in *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1316 (Fed. Cir. 2000), the Court said:

> [I]dentification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. See id. [Dembiczak]. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. See *In re Dance*, 160 F.3d 1339, 1343, 48 U.S.P.Q.2d 1635, 1637 (Fed. Cir. 1998), *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference. See *B. F. Goodrich Co. v. Aircraft Braking Sys. Corp.*, 72 F.3d 1577, 1582, 37 U.S.P.Q.2d 1314, 1318 (Fed. Cir. 1996).

Claims 7, 8, and 13 are dependant upon and include all the limitations of claim 5. We have shown above that the primary reference does not disclose the recited first pump. It is therefore impossible to combine the references to meet the limitations of claims 7, 8, and 13.

"Moreover, we observe that even if these references were combined in the manner proposed by the examiner, that which is set forth in appellant's claims . . . would not result." *Ex parte Bogar*, slip op. p.7 (BPA&I Appeal No. 87-2462, October 27, 1989). "Even if we were to agree with the examiner that it would have been obvious to combine the reference teachings in the manner proposed, the resulting package still would not comprise zipper closure material that terminates short of the end of the one edge of the product containing area, as now claimed." *Ex parte Schwarz*, slip op. p.5 (BPA&I Appeal No. 92-2629 October 28, 1992). "Although we find nothing before us indicating why it would be desired to combine the references in the manner urged by the examiner, it is clear to us that such a modification by itself would not result in that which is set forth in the claims." *Ex Parte Kusko*, 215 U.S.P.Q. 972, 974 (BPA&I 1981). That it is impossible to combine the references to meet the limitations of claims 7, 8, and 13 is reason enough for reversing the rejection of them. If this ground of rejection is maintained in the Examiner's Answer, he is respectfully requested to quote verbatim the language in the references regarded as corresponding to each limitation in these claims, and quote verbatim the language he regards as suggesting the desirability of combining what is there disclosed to meet the terms of these claims.

V. CLAIMS 8-10 MEET THE CONDITIONS FOR PATENTABILITY UNDER SECTION 103 AT LEAST BECAUSE THE REFERENCES FAIL TO SUGGEST THE DESIRABILITY OF COMBINING WHAT IS THERE DISCLOSED TO MEET THE LIMITATIONS OF THESE CLAIMS, AND IT IS IMPOSSIBLE TO COMBINE THE REFERENCES TO MEET THESE LIMITATIONS.

The final action states:

> Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatetable over Soucy (US 6,202,321 B1) in view of Qader (US 4,290,779). Soucy teaches an drying apparatus comprising all limitations recited in claims 8-10, with the exception of a specific auxiliary heat source, such as a furnace that burns biomass, although Soucy does teach that auxiliary heat can also be added anywhere to the airflow (column 8, lines 40-49). Qader teaches the use of a furnace 50 that burns biomass for providing heating when solar radiation is unavailable (column 5, lines 6-11). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the drying apparatus of Soucy to have an auxiliary heat source to provide heat to the drying chamber of Soucy because, as taught by Qader, it is well-known in the art to utilize a furnace that burns biomass in order to

> operate the system when solar radiation is unavailable, such as at night or during periods when the sky is overcast. P.7.

Claims 8-10 are dependent upon and include all the limitations of claim 5, and we have shown above that the reference fails to disclose at least the first pump recited in these claims. It is therefore impossible to combine the primary and secondary references to meet the limitations of these claims. That is reason enough for withdrawing the rejection of them. The references also fail to suggest the desirability of combining of what is there disclosed to meet the terms of these claims. If the Examiner persists in this rejection in the Examiner's Answer, he is respectfully requested to quote verbatim the language in the references corresponding to each element in these rejected claims and quote verbatim the language in the references regarded as suggesting the desirability of combining what is there disclosed.

VI. CLAIMS 17-21 MEET THE CONDITIONS FOR PATENTABILITY UNDER SECTION 103 AT LEAST BECAUSE THE REFERENCES FAIL TO SUGGEST THE DESIRABILITY OF COMBINING WHAT IS THERE DISCLOSED, AND IT IS IMPOSSIBLE TO COMBINE THE REFERENCES TO MEET THE LIMITATIONS OF THE REJECTED CLAIMS.

The final action states:

> Claims 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mullin et al. (US 4,099,338) in view of Drake (US 5,035,117). Mullin et al teaches a drying apparatus comprising all limitations recited in claims 17-21, with the exception of an auxiliary generator, such as an external combustion engine operating according to the Stirling thermal cycle, for providing all electrical energy required to operate the drying apparatus and for providing heat to a heat exchanger in fluid communication with the heat transfer system. Drake teaches the use of an engine/generator module 12 which includes a thermal engine 14 (such as a Stirling engine, which is an external combustion engine) with a shaft 16 driving electrical generator 18 for converting the work of the engine 14 into electrical power for electrical systems 22 for instrumentation, control and powering of the various components of invention 10 (column 2, lines 56-66). In addition, the exhaust of engine 14 is directed via pipes 44, 46 to heat exchanger 50 (column 3, lines 20-30). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the drying apparatus of Mullin et al. to have an auxiliary generator to provide all the electrical energy required to operate the drying apparatus of Mullin et al. and supply heat exhausted from the generator to a heat exchanger that is

> connected in fluid communication to the heat transfer system of Mullin et al. because, as taught by Drake, it is well known in the art to utilize an engine/ generator module in order to provide all the electrical power for electrical system of an invention, such as drying apparatus, and provide heat from the exhaust of the engine/ generator module to a heat exchanger in thermal communication with the heat transfer system. P.8.

The primary reference discloses a solar assisted dryer apparatus and method that primarily relies on a natural gas burner. Nothing in that reference remotely suggest an auxiliary generator in electrical communication with an electrical system of the dryer capable of providing all electrical energy required to operate the dryer. And the secondary reference entitled THERMAL ENGINE DRIVEN HEAT PUMP FOR RECOVERY OF VOLATILE ORGANIC COMPOUNDS is not remotely related to vegetable product drying or having an auxiliary generator in electrical communication with an electrical system of the nonexistent dryer capable of providing all electrical energy required to operate the dryer. And nothing in either reference remotely suggests the desirability of combining what is there disclosed to meet the terms of these claims.

What the Examiner is doing is using the claims being rejected as a template for attempting to read the prior art upon the claims.

> Here, the Examiner relied upon hindsight to arrive at the determination of obviousness. It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. [15]This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."[16]*In re Fritsch*, 23 U.S.P.Q. 2d 1780, 1784 (Fed. Cir. 1992).

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[15] *In re Gorman*, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). See also *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138, 227 USPQ 543, 547 (Fed. Cir. 1985).

[16] *In re Fine*, 837 F.2d at 1075, 5 USPQ2d at 1600.

CONCLUSION

In view of the forgoing authorities, remarks, and the inability of the prior art, alone, or in combination, to anticipate, suggest or make obvious the subject matter as a whole of the invention disclosed and claimed in this application, reversal of the rejection of all the claims is respectfully requested. If the Board is of the opinion that one or more claims may be allowable in amended form, the Board is respectfully requested to include an explicit statement authorized such an amendment in such claim and direct allowance of such amend claim in the absence of other grounds for rejection.

Respectfully submitted,

FISH & RICHARDSON P.C.

Date: SEP 2 0 2004

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(viii) ***Appendix of Claims***

2. A dryer for drying vegetable product comprising:

a thermal collector constructed and arranged to convert solar energy to heat energy;

a heat transfer system;

a housing having a drying chamber;

wherein said heat transfer system is in thermal communication with both said thermal collector and said drying chamber such that heat is able to move from said thermal collector to said drying chamber; and

further comprising a photovoltaic module constructed and arranged to provide electrical power to said heat transfer system, said photovoltaic module being electrically connected to said heat transfer system.

3. The dryer of claim 2 wherein said photovoltaic module further comprises a battery constructed and arranged to store electrical energy.

4. The dryer of claim 3 wherein said photovoltaic module provides all of the electrical energy consumed by said dryer.

5. A dryer for drying vegetable product comprising:

a thermal collector constructed and arranged to convert solar energy to heat energy;

a heat transfer system;

a housing having a drying chamber; and

wherein said heat transfer system is in thermal communication with both said thermal collector and said drying chamber such that heat is able to move from said thermal collector to said drying chamber;

wherein said heat transfer system further comprises:

a first heat transfer circuit including a first pump and a first heat transfer medium;

a second heat transfer circuit including a second pump and a second heat transfer medium;

a first heat exchanger; and

wherein said first heat exchanger is in thermal communication with said thermal collector via said first heat transfer circuit and said first heat exchanger is in thermal communication with said drying chamber via said second heat transfer circuit such that heat is able to move from said first heat transfer circuit to said second heat transfer circuit.

6. The dryer of claim 5 wherein said heat transfer system further comprises a second heat exchanger.

7. The dryer of claim 5 wherein said heat transfer system further comprises a heat storage medium, said heat storage medium being in thermal communication with said drying chamber such that heat is able to move from said heat storage medium to said second heat transfer circuit.

8. The dryer of claim 5 wherein said heat transfer system further comprises an auxiliary heat source, said auxiliary heat source being in thermal communication with said drying chamber such that heat is able to move from said auxiliary heat source to said second heat transfer circuit.

9. The dryer of claim 8 wherein the auxiliary heat source is a furnace constructed and arranged to burn biomass.

10. The dryer of claim 9 wherein said biomass is coffee parchment.

11. The dryer of claim 5 wherein said first heat transfer medium is water.

12. The dryer of claim 5 wherein said second heat transfer medium is air.

13. The dryer of claim 5 further comprising a heat storage medium in thermal communication with an auxiliary heat source, said thermal collector, and said drying chamber, wherein heat is able to move from said auxiliary heat source to said heat storage medium, from said thermal collector to said heat storage medium, and from said heat storage medium to said drying chamber.

17. A dryer for drying vegetable product comprising:

a thermal collector constructed and arranged to convert solar energy to heat energy;

a heat transfer system;

a housing having a drying chamber; and

wherein said heat transfer system is in thermal communication with both said thermal collector and said drying chamber such that heat is able to move from said thermal collector to said drying chamber;

wherein said heat transfer system also comprises:

an auxiliary generator in electrical communication with an electrical system of the dryer, the generator capable of providing all electrical energy required to operate the dryer.

18. The dryer of claim 17 wherein the generator is capable of providing all electrical energy required to operate all other coffee processing devices such that the dryer is a component of an off-grid coffee processing system.

19. The dryer of claim 17 wherein the generator is an external combustion engine.

20. The dryer of claim 17 wherein the generator operates according to the Stirling thermal cycle.

21. The dryer of claim 17 further comprising a heat exchanger in thermal communication with an exhaust of the generator and with the heat transfer system, the heat exchanger constructed and arranged to transfer heat exhausted from the generator to the heat transfer system.

32. A dryer for drying vegetable product comprising:

a housing defining a cylindrical drying chamber, the housing having an outer wall extending around the drying chamber, the outer wall defining a plurality of perforations for intaking and exhausting fluid;

an infuser adjacent to the perforations for infusing fluid through the perforations; and

wherein the housing is constructed and arranged to rotate relative to the infuser.

33. The dryer of claim 32 wherein the infuser is periodically adjacent to first and second relative sides of the outer wall, the first and second sides capable of changing position as the housing rotates relative to the infuser, the first relative side being in a position for intaking fluid into the drying chamber when the second relative side is in a position for exhausting fluid from the drying chamber.

34. The dryer of claim 32 wherein the infuser is in thermal communication with a heat source for heating fluid to be infused into the drying chamber.

36. A housing defining a drying chamber for drying vegetable product, the housing comprising:

a cylindrical wall extending around the drying chamber, opposing end walls at either end of the drying chamber, a plurality of perforations located for intaking and exhausting fluid, wherein the housing is constructed and arranged to rotate about an axis.

37. The housing of claim 36 further comprising a set of doors in the cylindrical wall to load and unload vegetable product.

38. The housing of claim 36 further comprising a set of baffles for mixing produce within the drying chamber, the baffles extending from the inner surface of the cylindrical wall.

39. A dryer for drying vegetable product, comprising:

a housing having a drying chamber, the housing having a fluid intake port and a fluid exhaust port located along a fluid flow path of the drying chamber, the intake and exhaust ports oriented such that the fluid flow path includes a substantial component in the vertical direction; and

a set of support members providing channels substantially oriented in the direction of the fluid flow path.

40. The dryer of claim 39 wherein the channels are adjustable relative to the vertical direction.

41. The dryer of claim 39 wherein the housing further comprises an entry port and an exit port, the entry port located vertically upward relative to the exit port.

42. The dryer of claim 39 wherein the channels are constructed and arranged to conduct product from a higher level relative to a ground level to a lower level relative to the ground level.

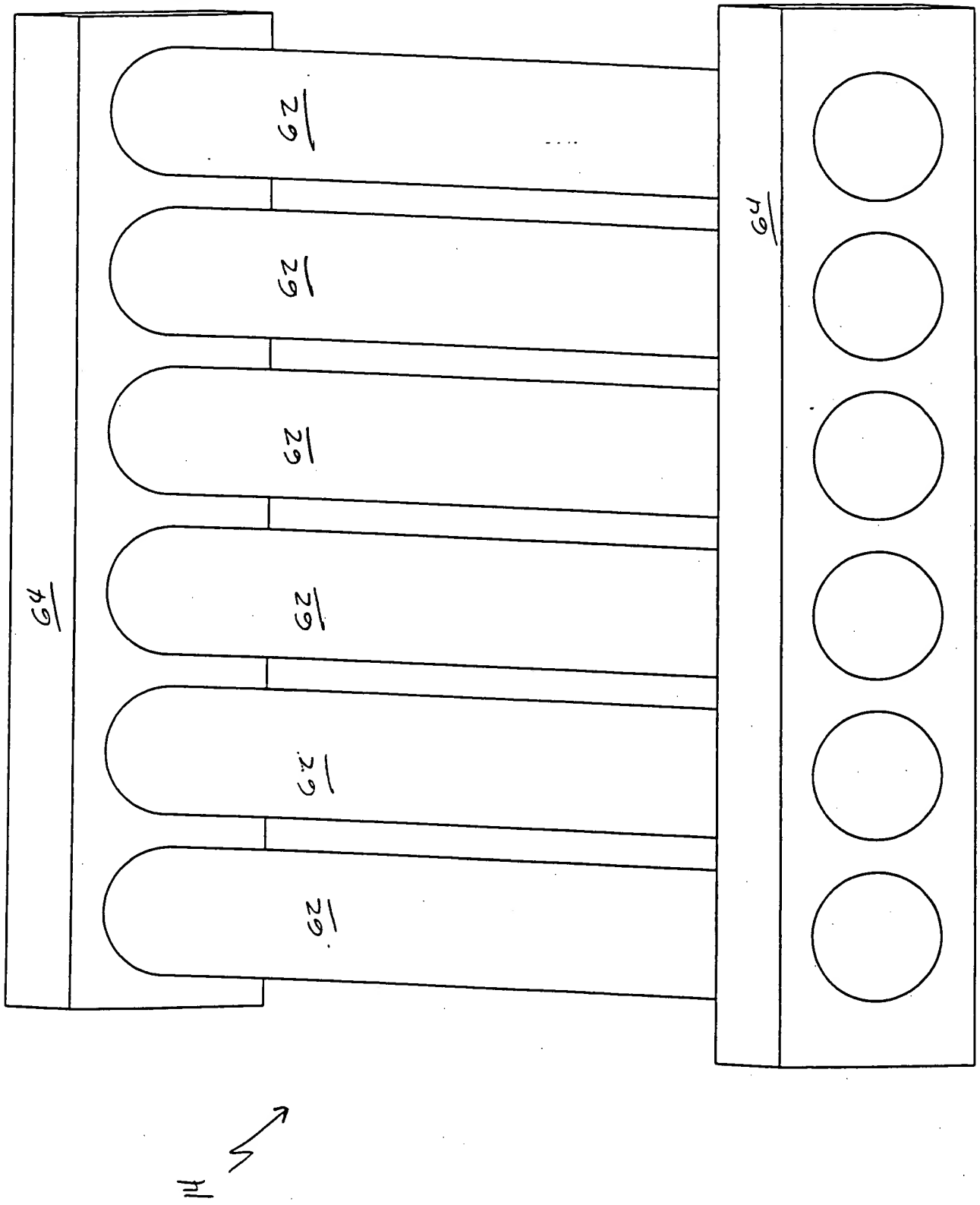

FIG. 2

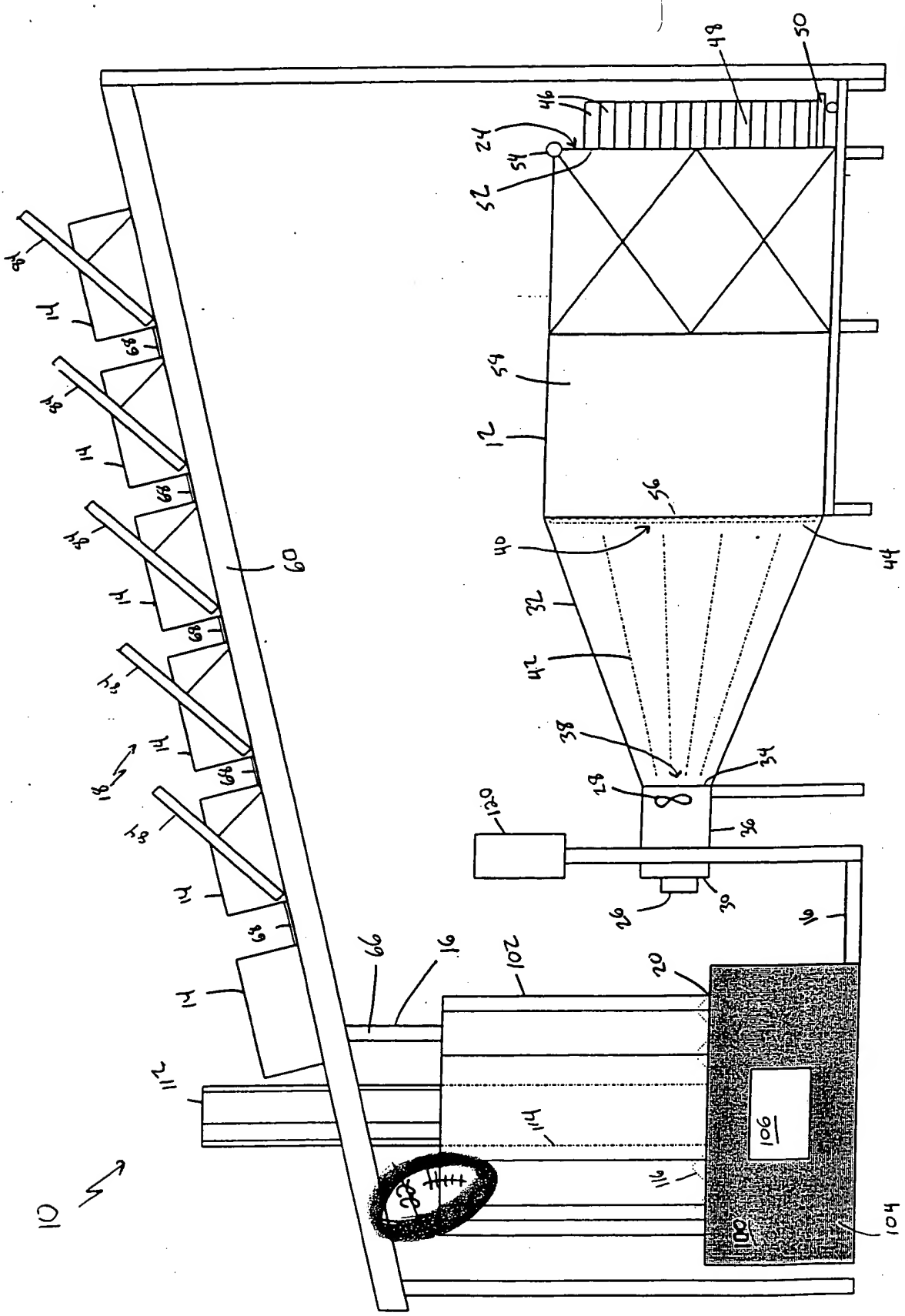

FIG. 1

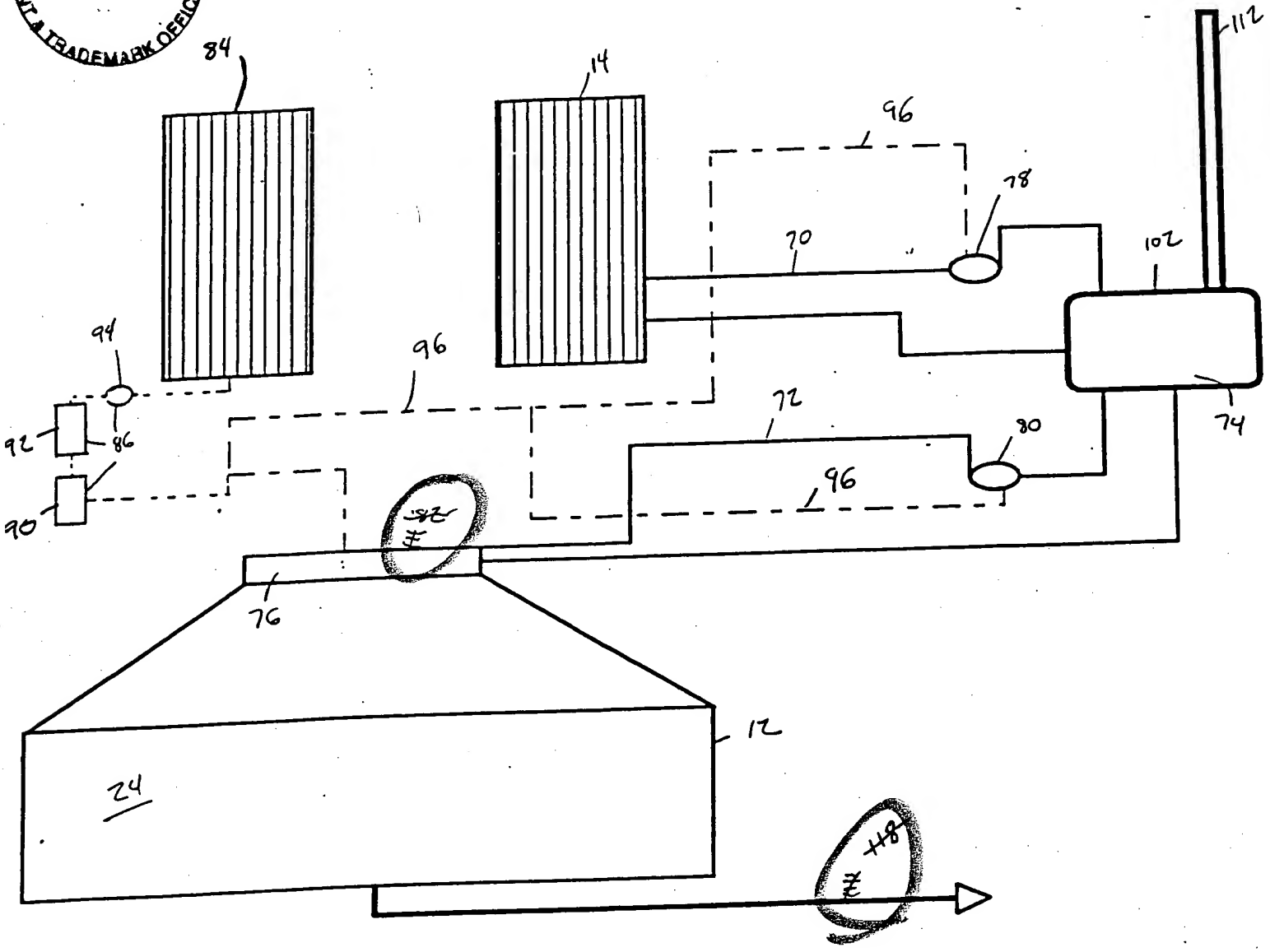

FIG. 3

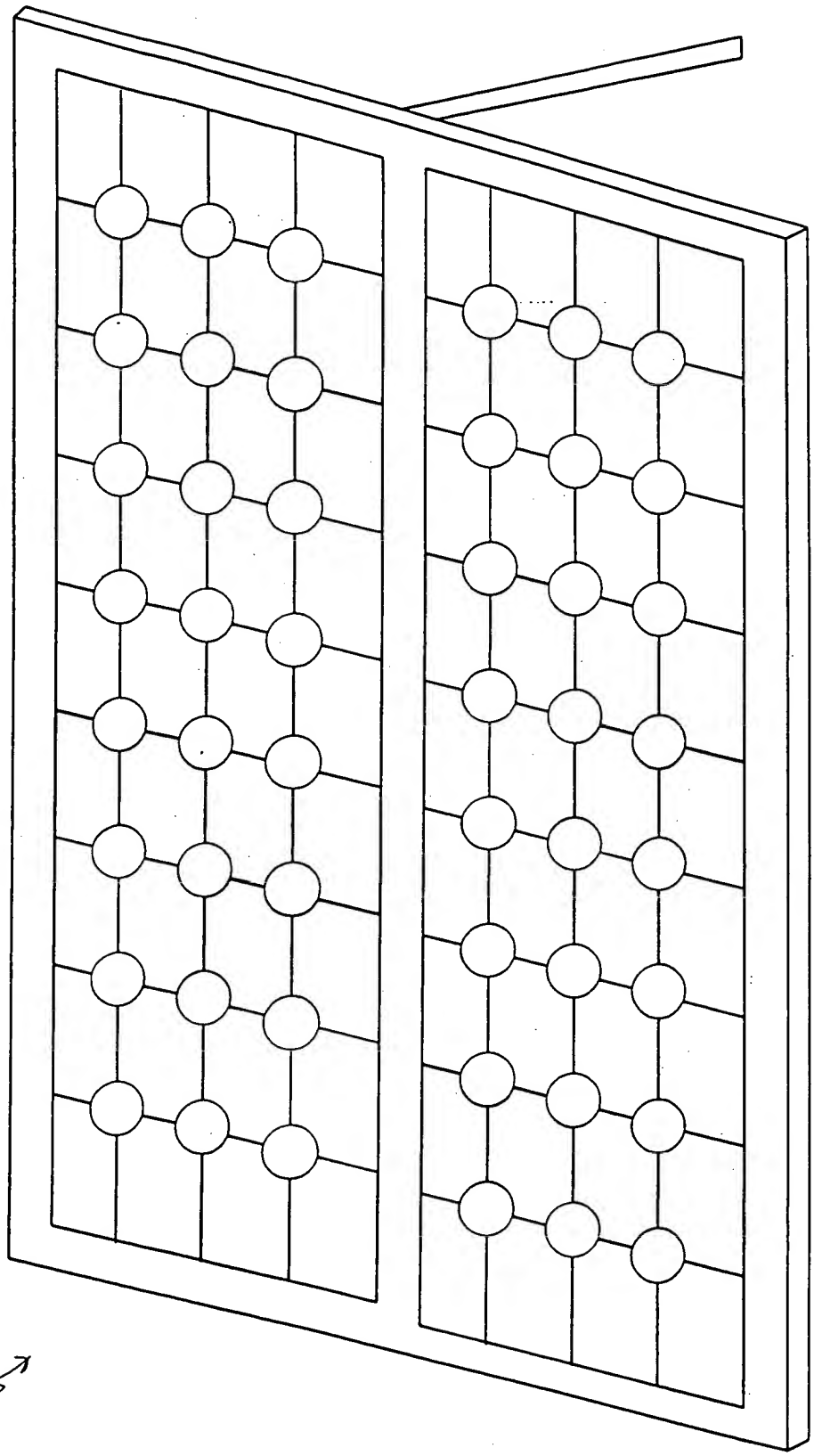

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FIG. 4

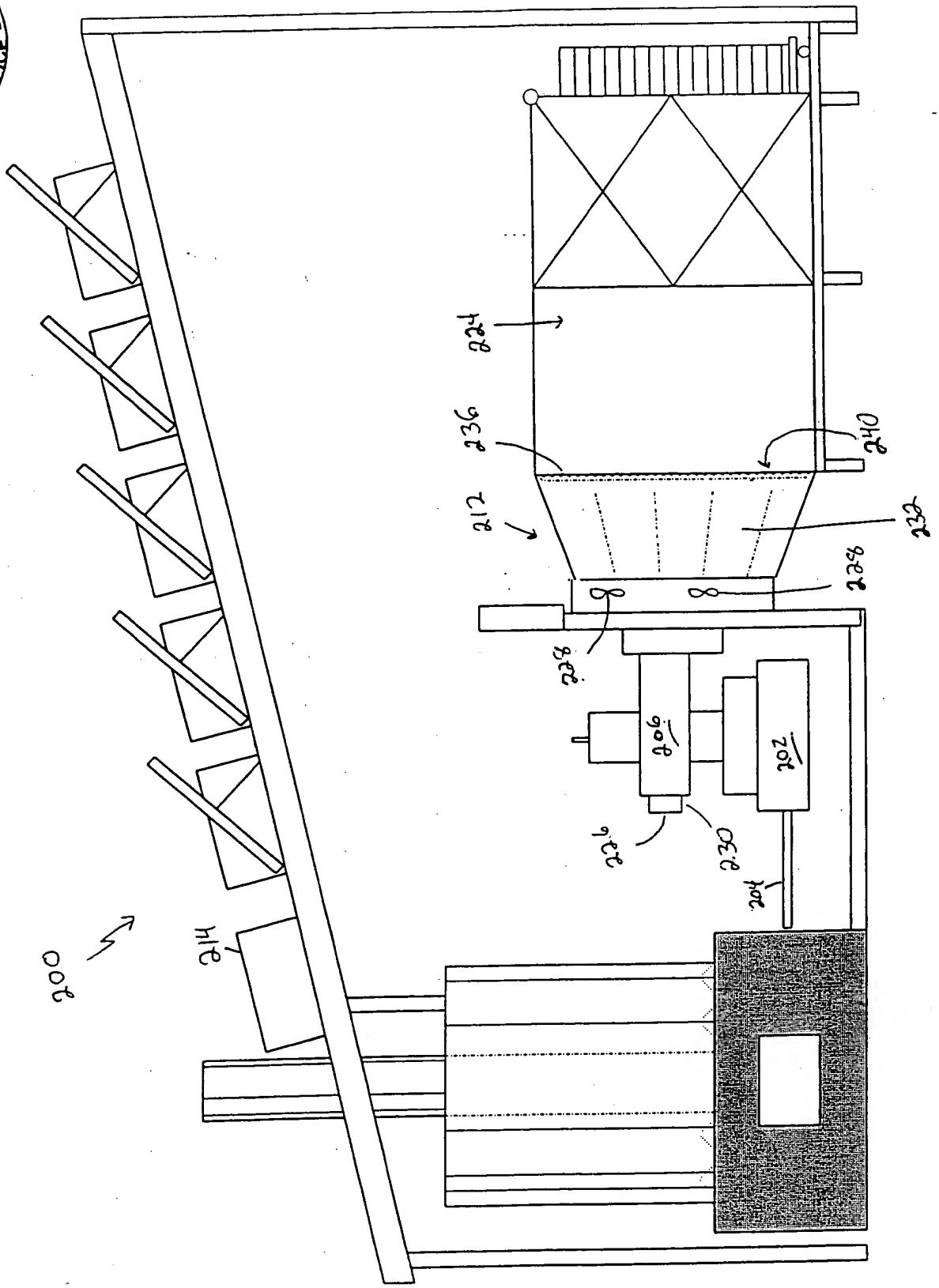

FIG. 5

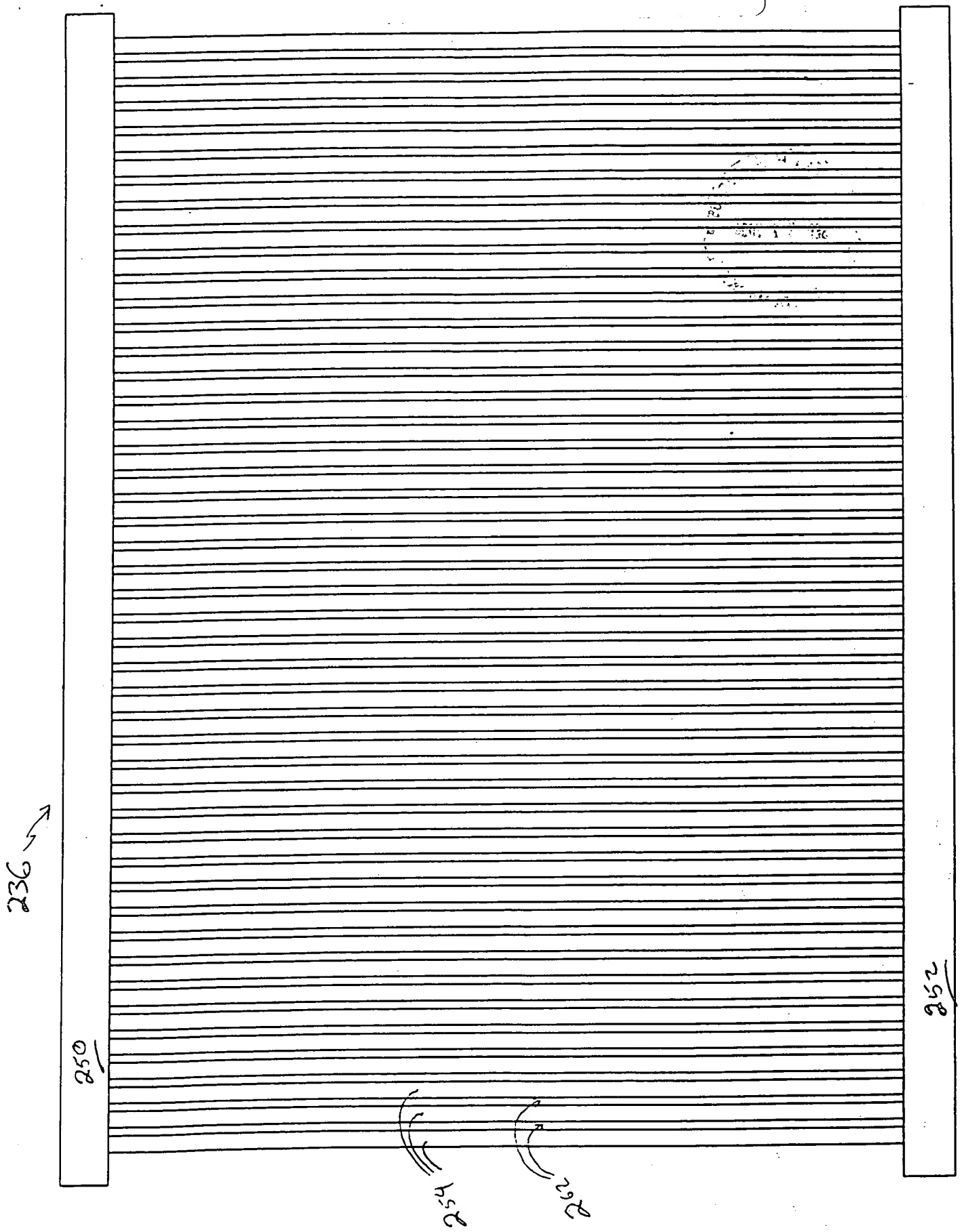

FIG. 6

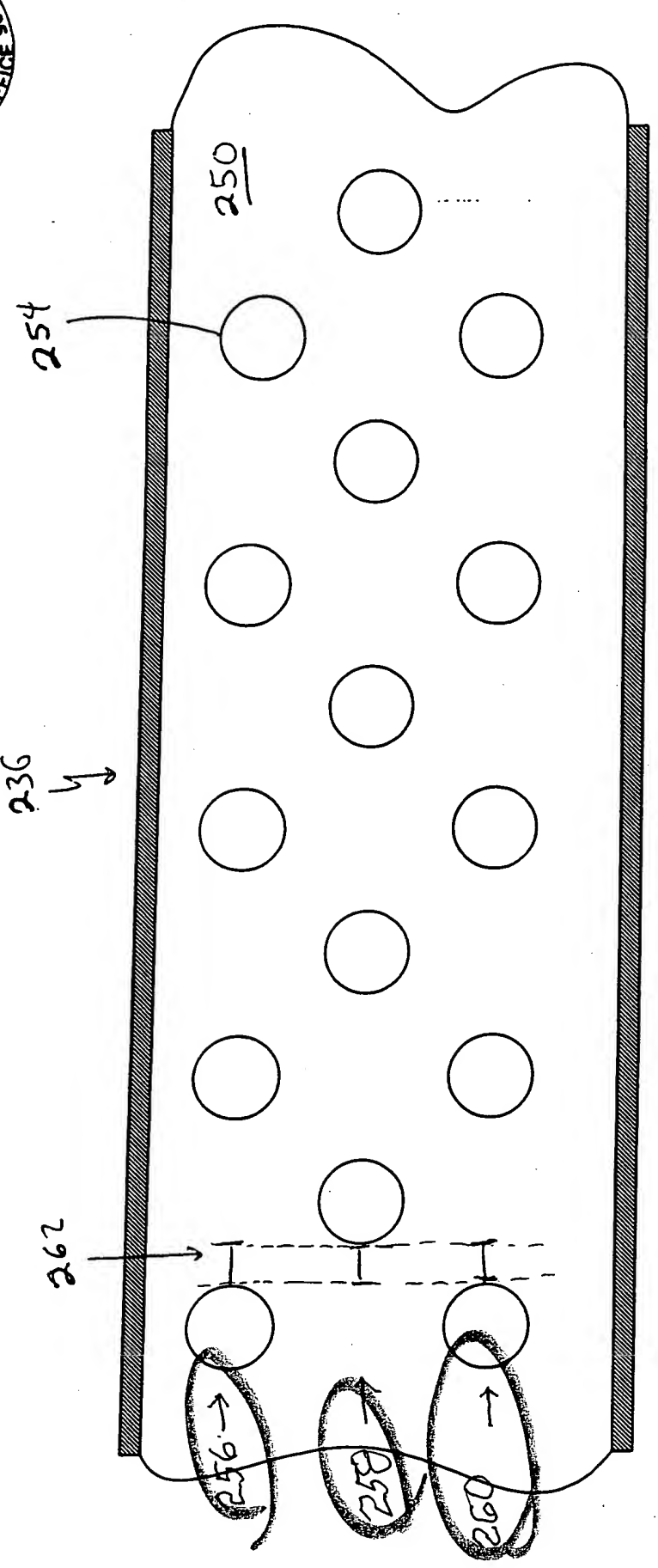

FIG. 7

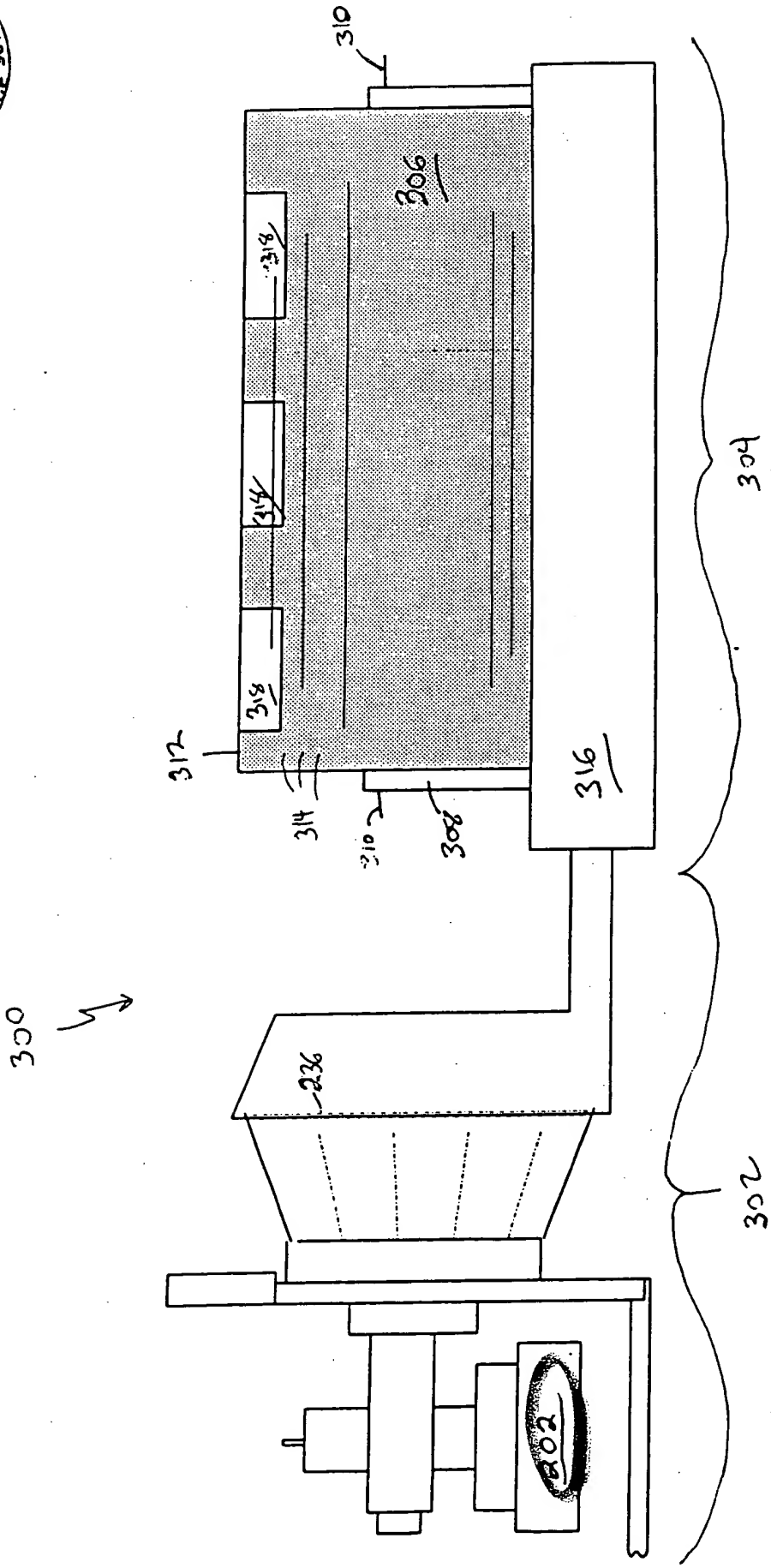

FIG. 8

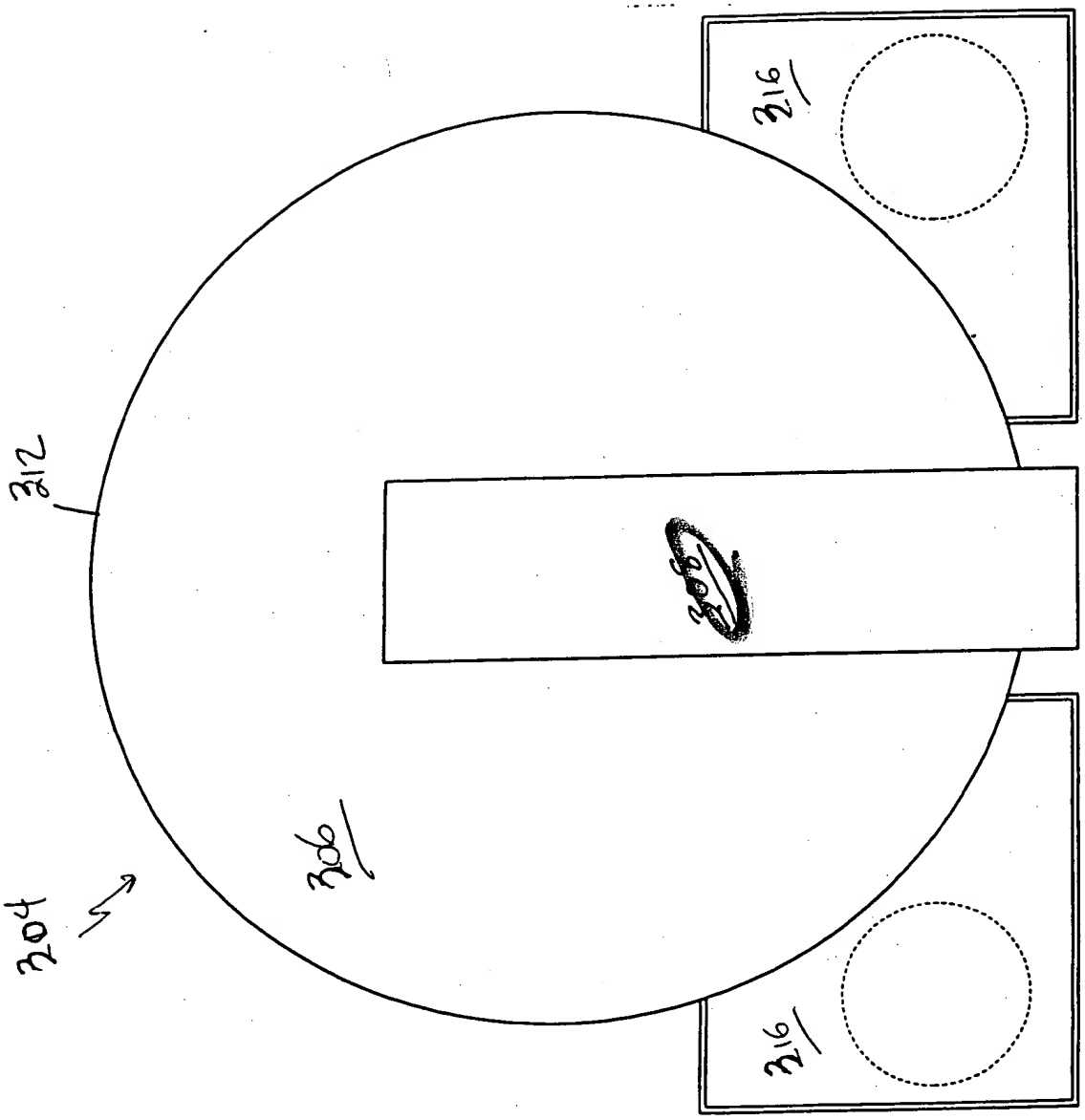

FIG. 9

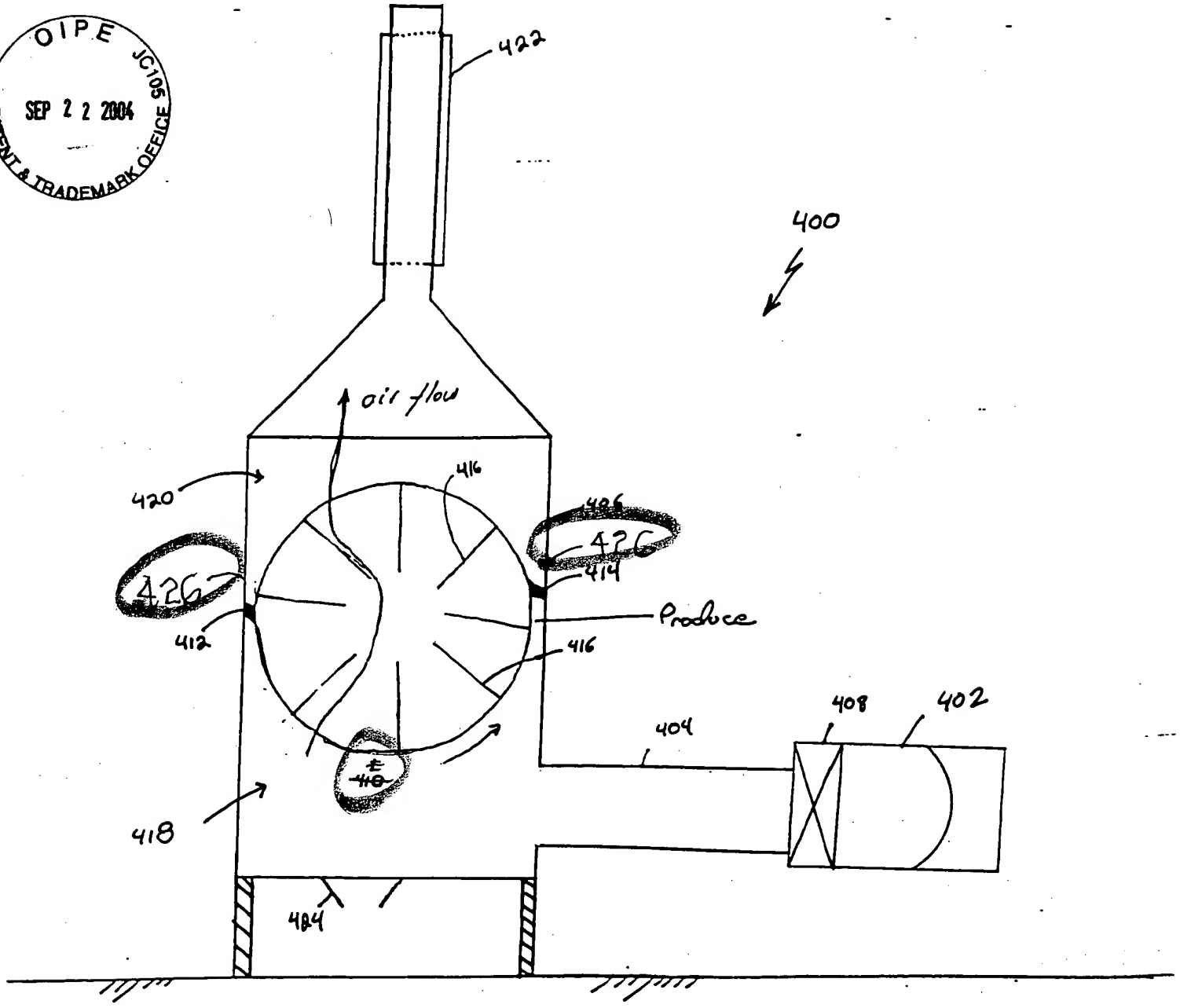

Fig. 10

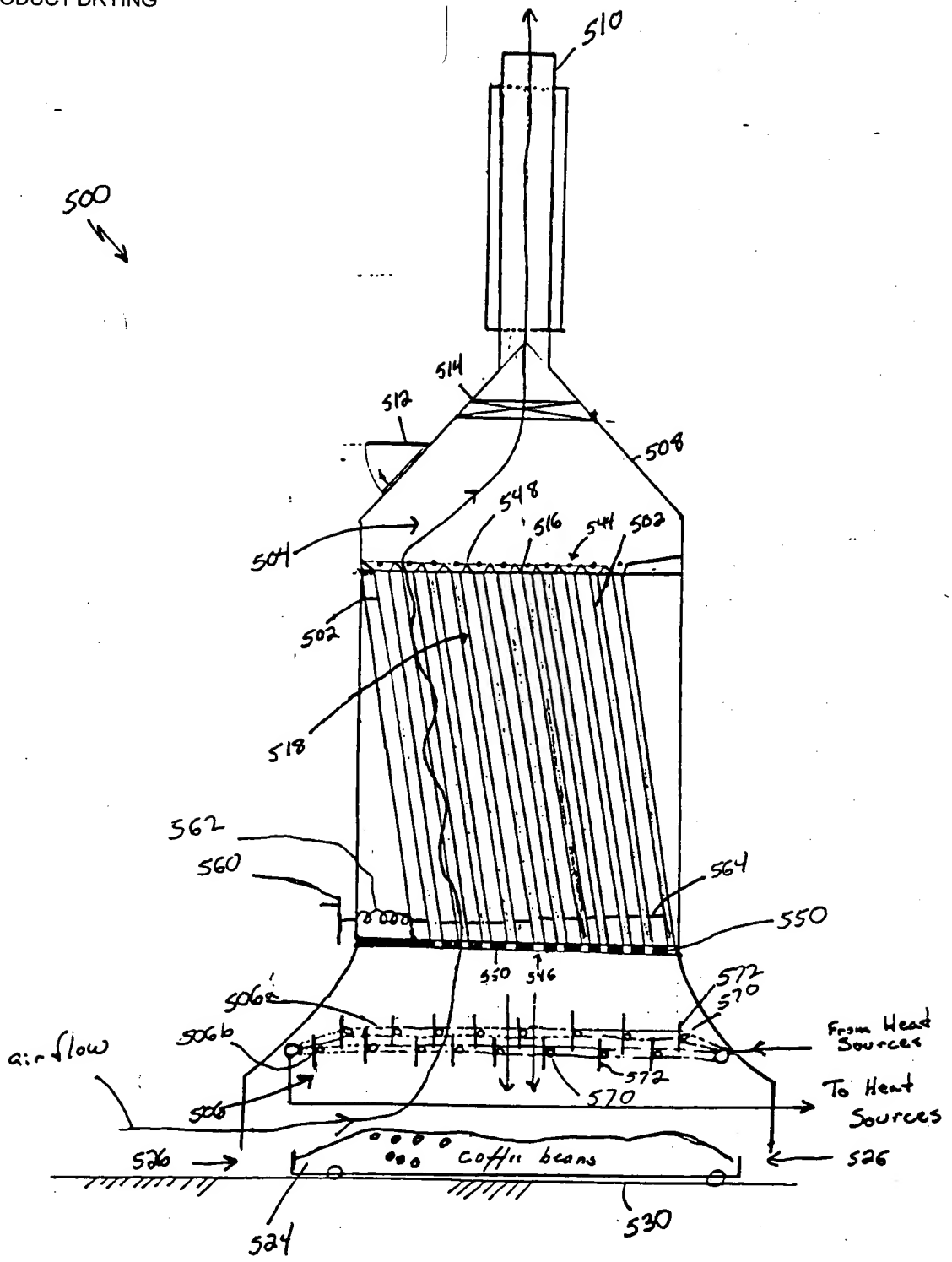

Fig. 11

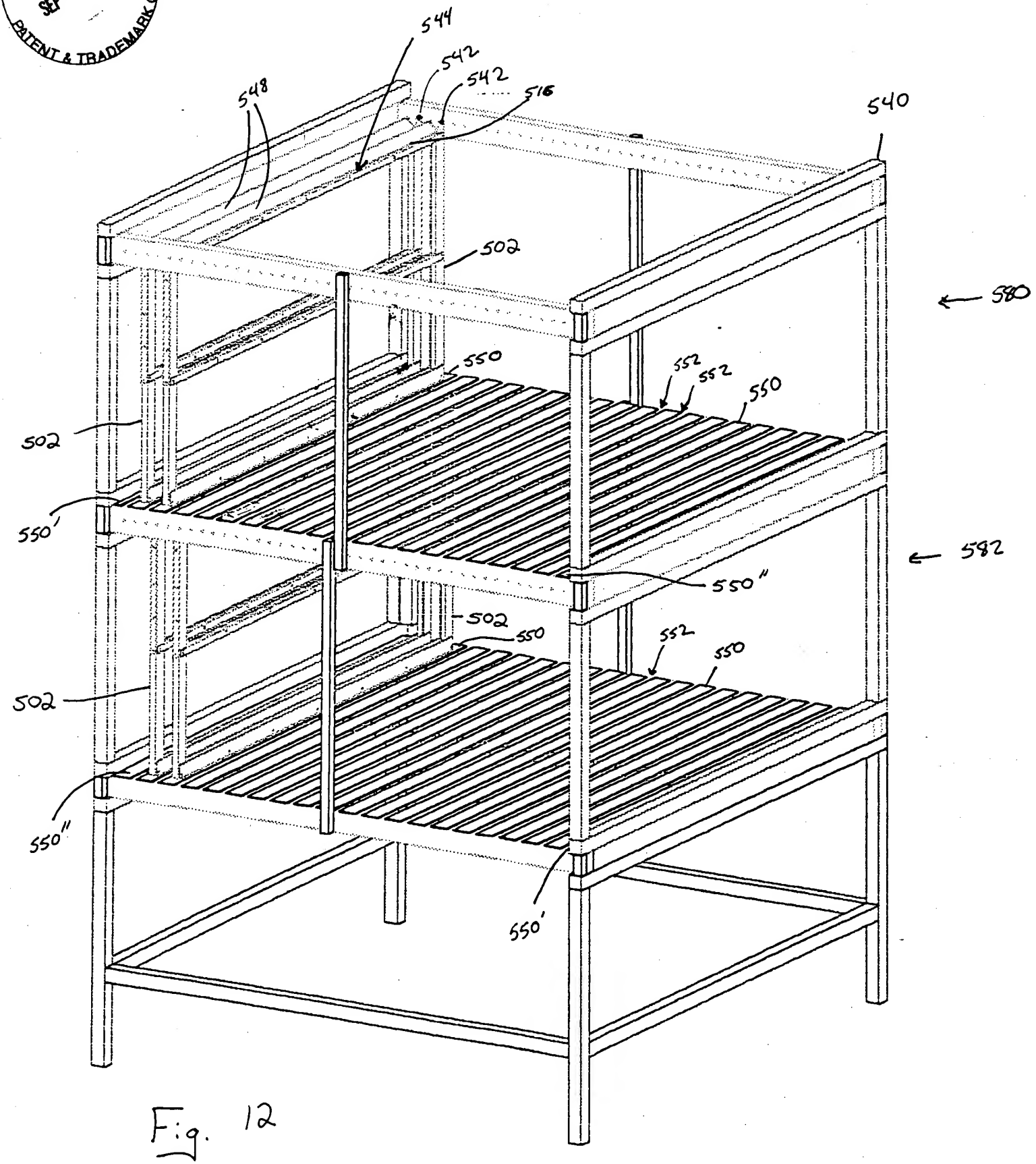

Fig. 12